Low Carbon Transport in Asia:

Strategies for Optimizing Co-benefits

Case Studies Presentation

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Outline

- Rationale
- Case studies
- Summarizing results

Rationale

- Previous research
  - Most studies **estimate co-benefits**
  - Few **analyze barriers** to realizing co-benefits
  - Even fewer **propose countermeasures** to overcome barriers
- Seven case studies
  1. Public Transport (Hanoi)
  2. Integrated Strategy (Hyderabad)
  3. Fuel Switch (Pakistan)
  4. Land Use (Bandung)
  5. BRT (Jakarta)
  6. Transport Demand Management (Beijing)
  7. Japan's Co-benefit Approach (Asia)
- Each case study presents
  - **co-benefits**
  - **analyzes barriers**
  - and **proposes countermeasures.**

Public Transport:
Hanoi, Vietnam

- **Background**
  - **Estimating climate co-benefits**
  - Hanoi Integrated Development and Environment Program (HAIDEP)-"Bottom up" public transit
  - Compare Mass Transit (30%) and BAU scenario (14.5%) to 2020
  - I million tons CO_2 difference
- **Barriers**
  - Growth in motorcycles and cars
  - Coordinating emissions standards *and* public transport
- **Countermeasures**
  - Recognition of "invisible" co-benefits
  - Integrating public transport with two-wheelers
  - Integrating public transport, emissions standards, and fuel efficiency standards

Lee Schipper, Wei-shiuen Ng, Tuan Le Anh and Hans Orn (University of California, Berkeley, California, USA; The World Resources Institute, Washington, D.C., USA; Hanoi University of Technology, Hanoi, Vietnam; CONTRANS, Sweden)

Integrated Strategy:
Hyderabad, India

- **Background**
  - **<u>Estimating climate and development co-benefits</u>**
  - Vehicle control program
    - CNG and LPG programs for public transport and 3 wheelers
    - Public transport and transport demand management
    - Vehicle inspection program
    - Management of transit traffic and phasing out of old vehicles
  - US$ 492 million in 2020 health and carbon savings
- **Barriers**
  - Diesel-CNG tradeoffs
  - Large uncertainties in estimates
  - Institutional fragmentation and capacity (i.e. weak BRT management)
- **Countermeasures**
  - Understand trade-offs
  - Improve availability and quality of data
  - Strengthen institutional coordination and capacity
  - Support from future climate regime for full strategies (NAMAs)

Sarath Guttikunda and Ramani Kopakka, (Desert Research Institute, Reno, Nevada, USA
Andhra Pradesh Pollution Control Board, Hyderabad, India)

Fuel Switch:
Pakistan

- **Background**
  - **<u>Fuel switch to compressed natural gas (CNG)</u>**
  - Investment from small entrepreneurs (early 1990s deregulation and promotion policies)
- **Barriers**
  - Lack of technical knowledge
  - Lack of infrastructure
  - Resistance to non-liquid fuel/ safety concerns
  - Lack of finance
- **Countermeasures**
  - Continue to align with energy security
  - Address stakeholder and technical concerns early
  - Engage private sector
  - Ensure government enables but not intervene

Hilal Raza, Syed Safdar Zaheer and Nasreen Farah (Hydrocarbon Development Institute of Pakistan, Islamabad, Pakistan)

Land Use Planning:
Bandung, Indonesia

- **Background**
  - **<u>Land use, transport, energy, and environment</u>**
  - Rapid growth, urbanization, and sprawl
- **Barriers**
  - Recognition of interactions between land use, transport, energy, environment policies
  - Too many, poorly defined laws and regulations
  - Administrative decentralization
- **Countermeasures**
  - Sequencing short-term and long-term policy reforms
  - Improve agency coordination and reduce bureaucratic "red tape"
  - Credible commitment from political leadership
  - Fiscal transfers from national level
  - Capacity building from international actors

Ranjith Perera and Ariva Sugandi Permana (Asian Institute of Technology, Bangkok, Thailand)

Bus Rapid Transit (BRT):
Jakarta

- **Background**
  - **<u>Case study of BRT system</u>**
  - 8 line of 15 line system
  - Line 1 successful; other lines less so
- **Barriers**
  - Coordination between Transjakarta and Jakarta Transport Agency
  - Integration with feeder system and other elements of multi-modal transport system
  - Distance based performance incentives
- **Countermeasures**
  - Public oversight board
  - Quality and quantity performance incentives
  - Convergence between local performance incentives and MRVable actions under a future climate regime

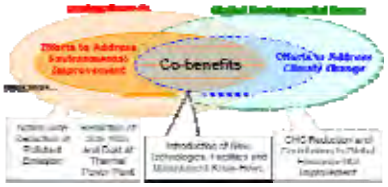
Heru Sutomo, Jane Romero and Eric Zusman (Universitas Gadjah Mada, Yogyakarta, Indonesia and IGES, Japan)

Transport Demand Management (TDM): Beijing

- **Background**
  - **<u>Case study of traffic demand management (TDM)</u>**
  - Combined with good public transport and mixed land use
- **Barriers**
  - Distribution of benefits (middle income drivers)
  - Loss aversion (perception of benefits)
  - Institutional coordination
  - Political incentivizes emphasize economic growth
- **Countermeasures**
  - Revenue redistribution (charged smart card)
  - Complementary bus lines and BRT systems
  - Interagency coordination mechanism
  - Multiple indicators for political promotion

Felix Creutzig, Alainna Thomas, Daniel Kammen and Elizabeth Deakin (University of California, Berkeley, California, USA)

Japan's Co-benefit Approach



- **Background**
  - **<u>Promoting a co-benefits approach</u>**
  - Recognition, implementation, and evaluation
- **Barriers**
  - Lack of awareness of co-benefits
  - Lack of financing
  - Lack of financial incentives for investors
- **Countermeasures**
  - Bilateral agreements to promote and scale up the approach
  - Provide tools to estimate and evaluate co-benefits
  - Financing for CDM projects
  - Mainstream co-benefits into ODA

Kazuhiko Takemoto, Tokuya Wada and Hirofumi Aizawa (Ministry of Environment, Japan)

Summarizing Results

Barriers	Relevant example	Countermeasures
Technical		
1. Awareness of co-benefits	Japan's Co-benefit Approach -Benefits invisible	•Work at multiple levels •Simplify and standardize tools and metrics
2. Modeling interactions	Estimating Co-benefits (Hyderabad/Hanoi) -Capture synergies	•Improve quality and quantity of data •Adapt tools and metrics to cross-policy interactions
Financial		
1. High costs	Fuel Switch (Pakistan) -Developing indigenous industry	•Engage private sector early and often •Create appropriate enabling conditions
2. Distribution of costs	Traffic Demand Management (Beijing) -Identify policy losers	•Compensatory mechanisms and revenue redistribution •Introduce supporting measures in parallel
Institutional		
1. Fragmentation and capacity	Land Use (Bandung) -Strengthen coordination and capacity	•Clarify implementing responsibilities •Strategically sequence policy interventions
2. Lock-ins and loopholes	BRT (Jakarta) -Overcome vested interests	•Establish public oversight mechanisms •Align performance incentives with stakeholder interests

Summarizing Results

- **Simple and standardized** metrics to assess co-benefits of **integrated transport strategies**.
- Strategies should **engage private sector**, **inform key stakeholders** and **compensate policy losers**.
- Strategies should be **phased in gradually** with clearly defined **implementing responsibilities**, **performance incentives** and **oversight mechanisms**.
- **Regional and international policy frameworks** should **incentivize** formulation and implementation of integrated transport strategies.
- At least, requires frameworks **linking MRVed NAMAs to external support**; at most, requires **graduated schedule of incentives** (preferential treatment) wherein external support **indexed to NAMAs' MRVed co-benefits**.

Appendix 1-Public Transport:

Hanoi, Vietnam

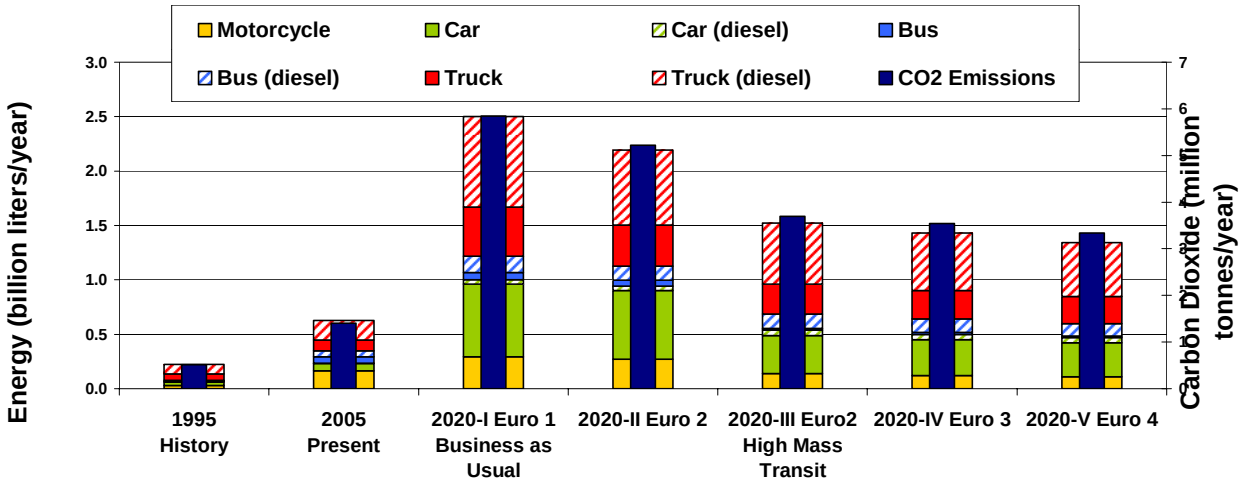


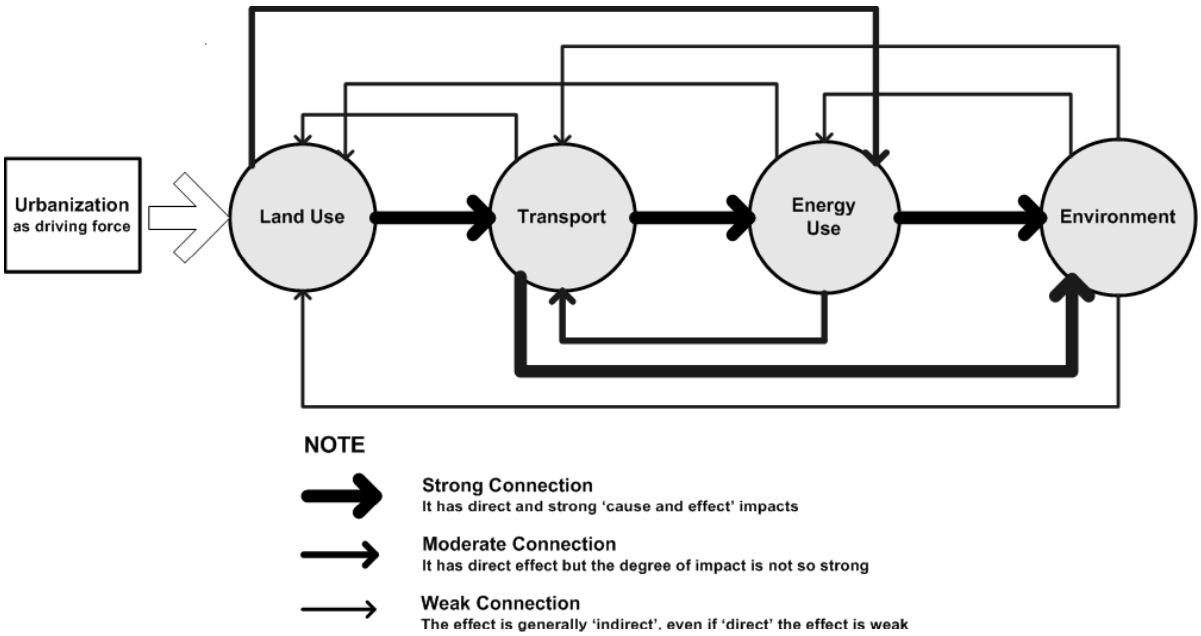
Table 8: Estimation of health impacts based on modelling 2006 (scenario control scenarios

Appendix 2-Integrated Strategy: Hyderabad

Category	PM_{10}	SO_2	NO_x	CO_2
Vehicular Activity	8,410	6,304	39,262	6,400,337
Paved Road Dust	3,272			
Unpaved Road Dust	4,279			
Industries	8,985	4,606	5,070	654,717
Domestic	1,845	667	545	83,485
Waste Burning	810			
Total	**27,599**	**11,577**	**44,877**	**7,138,538**

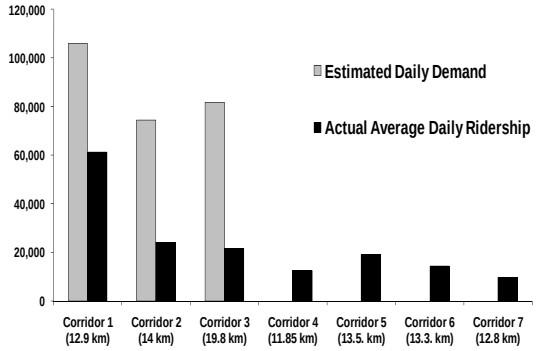
Health Endpoint	Number of Incurred Cases	
	2020 BAU	2020 Control
Mortality	6,347	2,018
Adult Chronic Bronchitis	10,951	3,483
Child Acute Bronchitis	98,650	31,373
Respiratory Admission	2,584	822
Crardiac Admission	2,267	721
Emergency Room Visit	106,720	33,939
Asthma Attacks	1,314,733	418,111
Restricted Activity Days	17,354,479	5,519,061
Respiratory Symptom Days	82,964,203	26,384,226

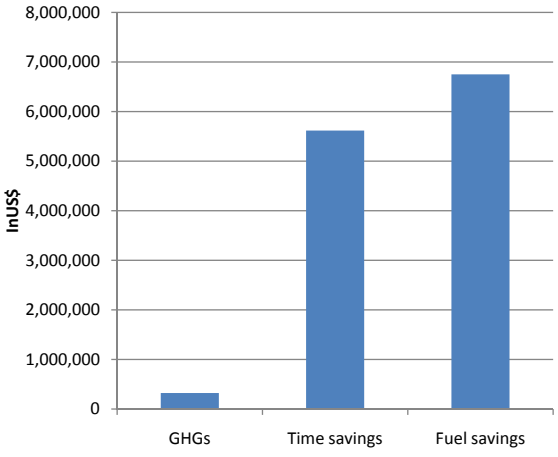
Appendix 3-Land Use: Bandung



Appendix 4—BRT:

Jakarta





Appendix 5-Transport Demand Management (TDM): Beijing